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Research, Development & Innovation

Annual Newsletter
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Welcome to the inaugural annual newsletter of the Research, Development and Innovation (RDI) Department!

The RDI Department is the driving force of Research, Development and Innovation activities for Uni Systems. To address similar needs across the Quest Group, a strategic decision was made to enable the RDI Department to offer such services to other Quest Group companies (ACS Courier, Info Quest Technologies, Quest Energy, BriQ Properties, and Cardlink), via the creation of an **Innovation Center (IC)** for the whole Quest Group, powered by Uni Systems. To achieve this mission, the RDI consists of two units: the Innovation Funding & Ecosystem Development (IFED) and the Innovation Management, Incubation & Realization (IMIR).

The purpose of this newsletter is to provide a **holistic picture of the activities and successes that the RDI has achieved in such little time since the beginning of this journey until December 2021.** The newsletter starts with an overall presentation of the **RDI Department**, its objectives, structure, and services, as well as the main **strategic playgrounds** around which its activities revolve. It then introduces **the IFED's and the IMIR's objectives**, followed by some **quick facts** about current activities and an overview of the RDI's **open innovation ecosystem** of partners and details about the **clusters, hubs and centers** that the RDI runs or participates in.

Next, we offer an overview of the **innovation funding proposals** that the IFED unit has thus far submitted and which are awaiting evaluation, as well as the proposals that have successfully attracted funding, offering more detail on some of the most **high-impact projects that are in the implementation stage** by the IMIR unit. The proposals are organized by thematic domain, reflecting Uni Systems' and Quest Group's strategic priorities.

Happy reading!

The RDI team



01 The RDI Department & Innovation Center

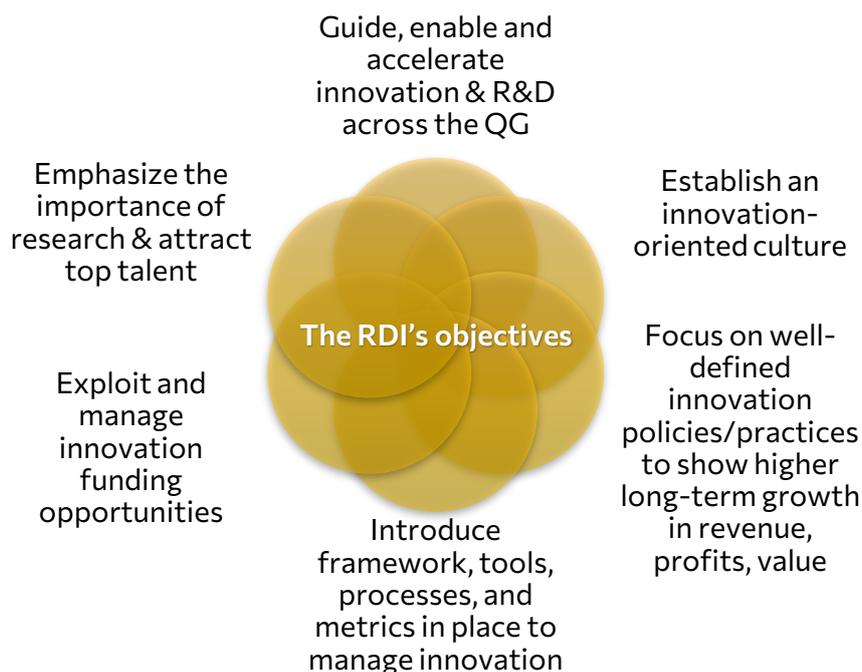
Invincible companies, however successful today, they don't rest on their laurels; they already work on tomorrow. The RDI aims to address this question: "How does Uni Systems engage with innovation, to compete for the future?" – a question that also applied to other companies that are now members of the IC (ACS Courier, BriQ Properties, Cardlink, Info Quest Technologies, and Quest Energy).

Mission & objectives

The RDI fosters and facilitates the Research and non-linear Innovation in Uni Systems and across the Quest Group, via:



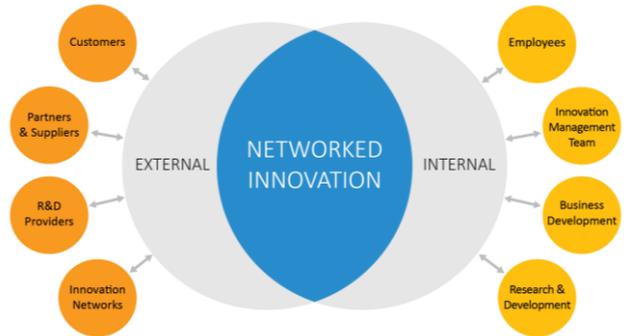
- ⇒ De-risking and incubating innovation ideas
- ⇒ Building an open innovation structure and innovation ecosystems
- ⇒ Bridging innovation to market via collaboration between industry, government, labs, and academia
- ⇒ Building a 'fail-friendly', agile environment (sensing-adapting)



A new path to the future via an open innovation ecosystem

To achieve these objectives, and prepare for the future, it was early on decided that a different strategy was needed – that of the creation of an open innovation ecosystem, consisted of a wide range of partners, incl.:

- ⇒ **academic and research organizations**, which are at the forefront of new ideas and can be the source of new talent
- ⇒ **large or small enterprises, start-ups or spin-offs**, which own state-of-the-art solutions, products and services
- ⇒ **subject and technology experts**, who hold solid knowledge on the latest developments in their respective fields
- ⇒ **consulting and support/training organizations**, which can provide the mechanisms for identifying strategic needs and facilitating innovation implementation and knowledge transfer
- ⇒ **public organizations, chambers, industry associations and regulatory authorities**, which provide the frameworks and policies for the present and the future of each of our areas of strategic priority



Expected outcomes

The key outcomes that Uni Systems and the IC's member companies can expect to gain from the activities and services of the RDI Department include:

- Drive short/long-term innovation outside the scope of mainstream business (Box 3)
- Increase likelihood of application of fundamental technology advances
- Enhance innovation opportunities by embedding them in sound business models and/or renovate declining ones



Transfer solutions to generate new business, bringing research results closer to the market and demonstrating the innovative capacity of QG

Via collaborative approach, increase our innovation scope and make joint innovation contributions to significant new business/market challenges

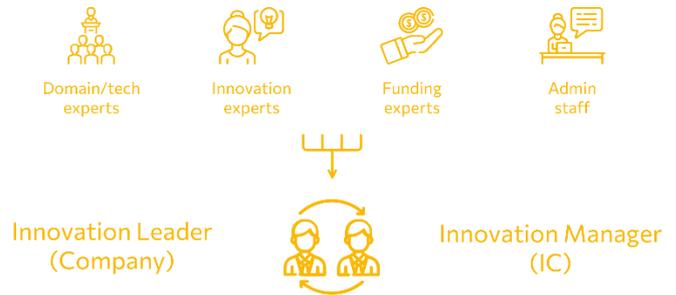
Strategic playgrounds

The RDI ensures that Uni Systems and the IC's member companies develop new value for revenue creation and optimization, via increasing their Innovation and R&D capacity in core areas of strategic interest that constitute the playgrounds of the future, such as:



The RDI's services

To facilitate the increase of the innovation capacity for Uni Systems and IC's member companies, the RDI has established a mechanism of close collaboration, via the appointment of an Innovation Leader, on behalf of each company, and an Innovation Manager, as well as dedicated experts (domain, technology, funding, and admin), on behalf of the RDI. Each Innovation Leader ensures that appropriate resources within their company are mobilized, while the Innovation Manager coordinates working teams both internally and externally. This mechanism involves a wide range of services:



Setting up a mechanism for the identification of the Company's business needs via	<ul style="list-style-type: none"> •regular communication & meetings •use of specialized information/collaboration tools •webinars and events
Matching tech trends & Company needs via	<ul style="list-style-type: none"> •providing info on high-potential new trends in domains and technologies, and on results from R&D projects •presenting relevant investment opportunities •organizing focused workshops to identify and or co-create innovative solutions for the Company
Covering the Company's tech needs via	<ul style="list-style-type: none"> •offering tech solutions from within the IC or its broader ecosystem by using available infrastructure and information tools to record the Company's needs and proposed solutions •helping the Company evaluate and decide whether to implement internally or assign to the IC
Identifying innovation funding solutions via	<ul style="list-style-type: none"> •identifying and informing the Company about suitable EU, regional and national funding opportunities •supporting the Company's participation in funding proposals •identifying suitable calls & partners •managing work packages •coordinating proposal writing and submission
Offering innovation management & support via	<ul style="list-style-type: none"> •providing the necessary knowhow and infrastructure (platform, cloud services) •developing an ecosystem that can produce truly innovative ideas •closely monitoring via the AI-empowered BrightIdea Innovation Management Platform all stages of innovation actions
Providing infrastructure via	<ul style="list-style-type: none"> •offering contemporary lab for 'test-before-invest' activities •supporting implementation in case of proposal approval •supporting innovation actions such as tax reliefs relating to innovation activities, IP issues, investment in spin-offs, joint ventures or new entities, scaling-up in international markets, cluster participation, ecosystem development

To provide these services, the RDI is structured in two units: the Innovation Funding & Ecosystem Development (IFED) and the Innovation Management, Incubation & Realization (IMIR).



02 Aim & Objectives of the IFED unit

The IFED unit aims to manage the full life cycle of research proposals for European and nationally funded research and innovation projects. Specifically, its activities revolve around:

RDI's alignment with strategic priorities

- ⇒ Coordinates concept drafting & development for RDI activities relating to strategic playgrounds of Uni Systems and the IC's member companies, in collaboration with relevant departments

Innovation ecosystem development

- ⇒ Develops & cooperates with a broad innovation ecosystem to facilitate concept drafting, investment and funding activities, monitoring of technology trends, knowledge transfer, development of innovative products & services, attracting talent
- ⇒ Identifying Domain & Tech experts with expertise in areas of interest
- ⇒ Developing collaboration opportunities with top Academic & Research Centers



Opportunity identification

- ⇒ Monitors EU & national funding sources
- ⇒ Researches and reports on funding opportunities
- ⇒ Evaluates pre-requisites and reports on funding opportunities

Proposals preparation & submission

- ⇒ Identifies, coordinates, communicates and negotiates with existing and potential consortium partners for proposal submissions
- ⇒ Leads or engages in consortium building and submission processes
- ⇒ Contributes in proposal writing and/or reviewing
- ⇒ Follows-up on deadlines and prioritizes proposals submission



Knowledge creation & communication

- ⇒ Organizes and updates the knowledge base of proposals according to domain and technology
- ⇒ Keeps track of proposal evaluation processes, results and feedback
- ⇒ Participates in meetings, events, conferences, workshops, exhibitions, etc., and communicates internally and externally the IFED portfolio



03 Aim & Objectives of the IMIR unit

One of the key objectives of the IMIR unit is to explore innovation opportunities for Uni Systems and the IC's member companies and to manage the delivery of funded innovation projects.

Identifying/Coordinating innovation opportunities & new ventures

- ⇒ Investigating and incubating innovation opportunities at pre-commercial & commercial stages
- ⇒ Monitoring specific strategic playgrounds (domains) and technology areas (strategic focus areas)
- ⇒ Supporting Uni Systems and each IC member company with specific Innovation Managers responsible for monitoring trends directly relating to specific domains for each company
- ⇒ Identifying, investing and incubating new ventures, e.g. OpteChain, Probotech, etc.

Managing the innovation process

- ⇒ Designing & monitoring the innovation management process
- ⇒ Identifying and incubating innovation opportunities in connection with the innovation ecosystem in response to trends, specific opportunities and business requests
- ⇒ Administering the Innovation Management Platform, i.e. BrightIdea, and coordinating training activities relating to the platform for Innovation Leaders & Innovation Managers
- ⇒ Collaborating with Innovation Managers to set up Challenges on the platform



Coordinating realization of innovation projects/initiatives



- ⇒ Coordinating the delivery of funded R&D projects
- ⇒ Managing the business and technical aspects of internal innovation projects (e.g. Snap4City), pilots, proof of concepts
- ⇒ Engaging & managing multiple internal & external teams/resources
- ⇒ Coordinating the participation of Uni Systems and IC to innovation clusters, competence centres and other collaborative schemes

Supporting the innovation process administratively

- ⇒ Administering funded projects following EU rules, in full alignment with corporate procedures
- ⇒ Managing the subcontractors and contractors' financial & contractual aspects
- ⇒ Setting-up and preparing managerial financial accounting reporting
- ⇒ Managing/supporting admin for all innovation funding initiatives in Uni Systems and IC companies



04 Quick Facts

One of the key objectives of the RDI is to initiate and progress innovation initiatives that aligns with the strategic goals of Uni Systems and the IC's member companies, all operating in multiple sectors and working with groundbreaking technologies. These initiatives reflect the drive of the Quest Group to accelerate the digital transformation of industries and communities.

Here are some key facts about the RDI's journey thus far (until Dec 2021):

- ⇒ **128** proposals submitted, with total budget of more than **587 million euros**
- ⇒ Uni Systems has coordinator status in **33%** of proposals submitted thus far
- ⇒ **15** projects already awarded funding and **6** proposals for clusters/centers approved
- ⇒ Approx. **€ 6 million** of approved funding thus far for Uni Systems & the IC's member companies
- ⇒ Approx. every **1 in 6** proposals submitted is successful
- ⇒ Evaluation of opportunities and submissions to more than **16** different funding schemes, most of which are highly competitive and have **less than 9%** success rate
- ⇒ Proposals and projects spread across **15** different thematic areas of strategic priority
- ⇒ Participation in **4** clusters, **2** competence centers and **3** digital innovation hubs

The process of discovering appropriate funding opportunities for Uni Systems and the IC's member companies is a rather complex one, as each one operates in different areas and has different offerings, strengths, capabilities, and priorities. At the same time, the process of preparing funding proposals that will compete successfully with other submissions requires careful coordination and diligence. Similarly, the implementation of innovation projects is a challenging process that needs optimized mobilization of resources both internally and externally.

Yet, in just two years, these efforts have been clearly rewarded, giving a clear signal for the future: onwards and upwards!



05 Our Open Innovation Ecosystem

From the beginning, it was clear that, in order to nurture innovation initiatives, we needed to look not only inwards but also outwards. The development of an open culture and an open innovation ecosystem has been a strategic choice.

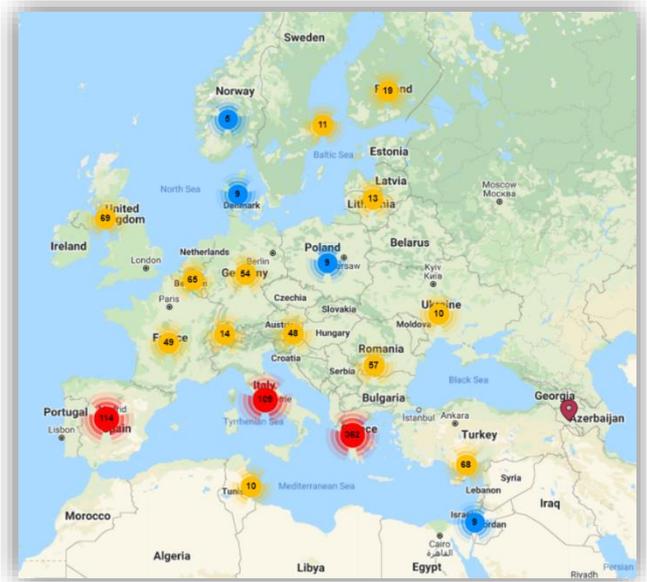
The RDI, in less than two years, has established a wide innovation ecosystem, constantly developing its network of current and potential partners across its different areas of activity. In reality, it has now managed to create an **ecosystem of ecosystems**, each one activated according to emerging needs.

Of particular importance, is the ecosystem of partners in relation to **innovation funding** that the IFED unit manages. One of its key objectives is to identify the right partners for the funding proposals and projects that align with the strategic priorities of Uni Systems and the IC's member companies, and explore opportunities for further collaboration with them.

Currently, the unit manages a vast network of more than **1173** different partners across the world (based mainly in Europe, but also the US, Middle East, and Japan), such as: Startups & SMEs, Large companies, Universities and Research Centers, Governmental bodies and ministries, and Non-profit organizations. Key partners include:

- ⇒ Ubitech Ltd
- ⇒ Pragma IoT
- ⇒ Centre for Research and Technology Hellas (CERTH/EKETA)
- ⇒ Foundation for Research and Technology - Hellas (ITE/FORTH)
- ⇒ University of Patras
- ⇒ Institute of Entrepreneurship Development (iED)
- ⇒ National Technical University of Athens (NTUA)
- ⇒ BDM Consultants
- ⇒ BK Plus Europe
- ⇒ Università degli Studi di Firenze (U of Florence)
- ⇒ Fraunhofer-Gesellschaft
- ⇒ Red Mullet

Outside Greece, the largest number of partners comes from Italy (111), Spain (108), and Germany (57).



06 Innovation Hubs, Clusters & Centers

In full alignment with its open innovation ecosystem strategy, the RDI has shown solid commitment to create and/or participate in Innovation Hubs, Clusters & Competence Centers that bring together various stakeholders developing solutions for industries of strategic priority for Uni Systems and the IC's member companies.

Clusters

- collaborative structures aiming to develop and exploit innovative products, services and processes with high potential of added value, international recognition and competitiveness
- participation only, no investment needed

Competence Centers

- centers that have the necessary infrastructure and know-how to support innovation, through providing specialized services/products and technology transfer to companies, especially SMEs
- investment driven

Digital Innovation Hubs

- not-for-profit, one-stop shops, consisting of a coordinated group of organizations with complementary expertise that support companies (SMEs/mid-caps) and/or the public sector in their digital transformation, to become more competitive with regard to business processes/products/services, and improve their sustainability (e.g. energy consumption, carbon emissions)
- grants

Quick facts

	Proposal	Leader	Partners	Participating Company
Clusters	AGILE4.0	CERTH	13	Uni Systems
	HBIO	FORTH	27	Uni Systems
	PLEIADES	Uni Systems	20	Uni Systems (coordinator) PROBOTEK
	SMART MOBILITY & LOGISTICS	CERTH	21	ACS Courier PROBOTEK
Competence Centers	I4BYDESIGN	CERTH	23	Uni Systems
	Π-NET	UoPatras	26	Uni Systems
Digital Innovation Hubs	LIVINGTRAC	UoAthens	39	Uni Systems
	SMARTHEALTH	FORTH	21	Uni Systems
	HEALTH HUB	iED	27	Info Quest Technologies



Clusters

Proposals submitted by the RDI in relation to the creation of innovation clusters have been successful, and as a result the clusters presented below are all operational.

PLEIADES - Pleiades Internet of Everything

The cluster (<https://pleiadesiot.com/>) was launched in 2019, contributing to the creation of a dynamic IoT ecosystem and aiming to speed up the **adoption of IoT** in Greece. Its members include key IoT players – large companies, successful SMEs and dynamic startups, research centers, universities, associations and end-user representatives, with **Uni Systems being a key founding member**. Pleiades drives business, policy, research and innovation development in IoT & Edge Computing and other converging technologies across the Digital Value Chain to support digitization and competitiveness in Europe. The activities of the cluster start with the creation of a **horizontal IoT Platform** based on which a broad range of applications and data can be integrated to provide new products and services relating to Next Generation Solar Heaters, Green and Smart Museum, Smart Environmental Monitoring, Drone Inspections, Data Marketplaces for IoT, Phygital Retail Interoperability Standardization, Smart Facilities Management, Smart eHealth, etc.

AGILE 4.0 Cluster Aims

- Becoming a one-stop shop offering digital solutions
- Developing innovative Machine Learning and AI methods to support processing of Big Data
- Integrating AI, robotics and IoT to support maximization of productivity & creation of better products/services
- Offering standards & processes for industry 4.0
- Collaborating with international clusters (e.g. eFactory Association, Industrial Data Space)
- Creating a model training center for knowledge transfer purposes and attracting new members
- Modernizing and training members in innovative tech via workshops/seminars

AGILE 4.0 CLUSTER - Digital Innovation for the Industry of the Future

The cluster seeks to contribute to the increase of productivity and **agile manufacturing**, as well as the digitalization of its members (renowned industry organizations) via the adoption of new technologies and thus securing their long-term survival and competitiveness. The cluster also seeks to become a model center focused on demonstrating and offering training of new technologies through the organization of informative seminars, in order to support SMEs in their successful transition to **industry 4.0**.

IN COMPOSE FOR SMART MOBILITY & LOGISTICS CLUSTER - Initiative for Collaborative Development and Exploitation of Innovative Products and Services for Mobility and Logistics

This cluster – the 1st of its kind in Greece – aims to support participating companies to lead the highly-dynamic sector of **smart mobility and last-mile logistics** and to collaborate in designing, developing, and commercializing new solutions (products/services), in alignment with the pressing challenges to cities to adapt to climate change. It will support innovation by: a) increasing adoption of the innovative solutions by the market, b) maximizing the capacity of participating companies to continually develop their solutions and create new ones, and c) multiplying the impact of innovation through transfer of knowledge.

HBIO CLUSTER - Hellenic Biocluster

HBIO is **the 1st health-related cluster in Greece**. It consists of dynamic Greek companies with high-added value products and services, highly skilled human resources and academic and research organizations with high-profile, world-renowned research activity. HBIO is currently operating in Greece, yet its members have large international and exporting presence,



thus the cluster's activities have expanded abroad. Its vision is to create scientific, technological and business excellence in the health sector, via developing products and services of high-added value. It aims to fully exploit innovation activities within the country, to promote synergies between the private sector and public research organizations, and to enhance the international competitiveness of its members, which will in turn strengthen the Greek economy.

Competence Centers

The RDI currently participates in two Competence Centers. Proposals for this were approved, and thus the Competence Centers are now operational.

I4BYDESIGN - Competence Centre for Industry 4.0: From Design to Implementation

The vision of I4byDESIGN is to become a competitive competence center, both at nation-level and at EU-level. Consisting of 23 renowned Greek enterprises in the **industry 4.0** sector, the center will link research organizations and commercial enterprises, offering services which will benefit its members (incl. Uni Systems):



The center, by focusing on **digital transformation**, adoption of **circular economy** strategies, **supply chain optimization**, standardization and support of new patents, as well as **knowledge transfer** to businesses, aims to offer a reference framework for industry 4.0; thus, it has the potential to transform all members into more competitive and technologically advanced entities that can participate successfully in industry 4.0. At the same time, the center will contribute to the smart, sustainable and outward-looking development of its members, as well as to the development of new collaborations via a variety of activities. The center will create a new space of demonstrating new technologies, new applications, new products, services and processes relating to industry 4.0 that companies can adopt. The center will promote its activities via informative webinars, workshops, trade shows, conferences, as well as social media campaigns.

Π-NET - Competence Centre for 5G and Beyond: Empowering Vertical Industries

By participating in Π-NET, the **1st competence center for Advanced 5G networks in Greece**, Uni Systems will:

- Become a core player in advanced 5G networks with emphasis on supporting sustainability and vertical value chains in areas of strategic priority like Smart Cities, Smart Logistics, Energy, Civil Protection, Tourism, Self-driving Vehicles, Robotics, Smart Manufacturing, Digital Health, etc.
- Use, jointly with other members, the infrastructure and equipment of the Center for piloting and demonstrating technological solutions
- Participate in knowledge transfer for advanced 5G networks and provision of related research and development services
- Participate in informative training events for advanced 5G networks targeted toward specific industry sectors that are already using or plan to use 5G apps

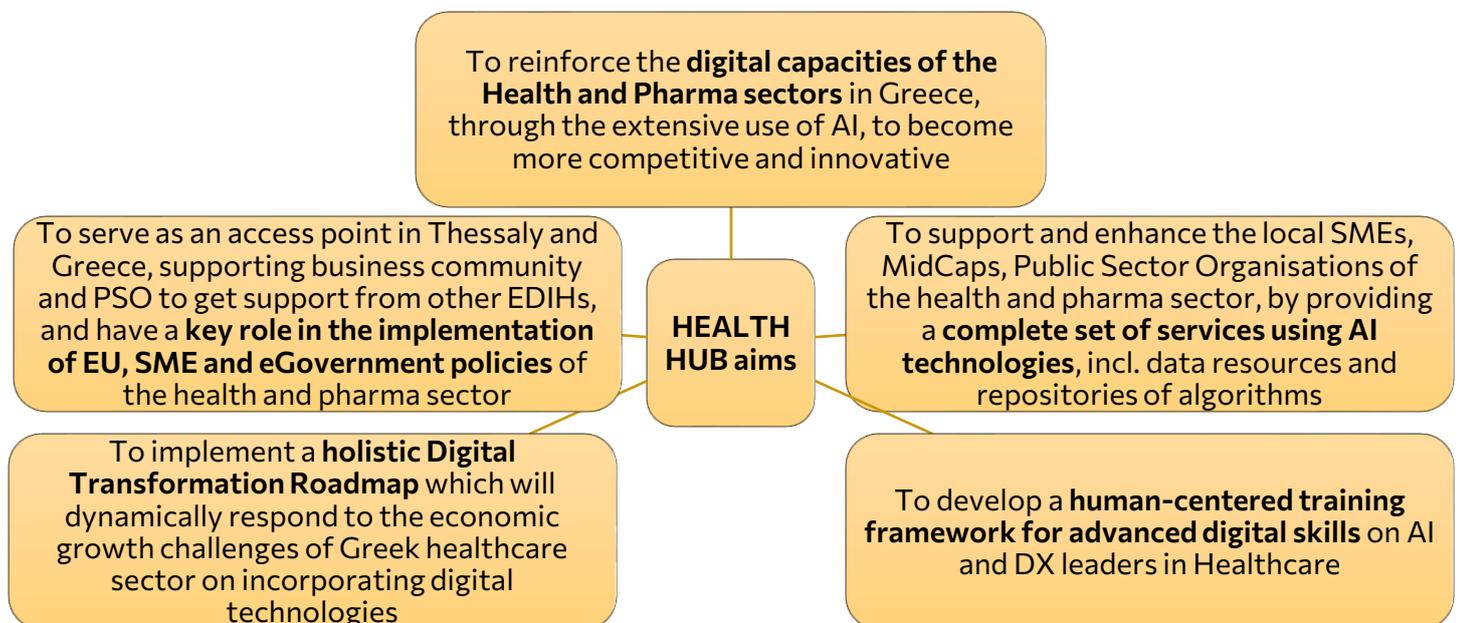


Digital Innovation Hubs

The RDI has currently put forward proposals at EU level for three digital innovation hubs.

HEALTH HUB - Healthcare and Pharmaceutical Industry Transformation through Artificial Intelligence Digital Services

Health Hub aspires to lead the digital transformation of Greek SMEs, MidCaps, and Public Sector Organizations. It represents a collaboration of 3 public bodies, 6 universities, 4 research institutions and organizations, 2 technology organizations, 3 healthcare providers and 6 business support organizations. In addition to Thessaly, Health Hub will also have antennas in 6 regions across Greece: Ionian Islands, Aegean, Western Greece, Attica, Central Macedonia and Crete, through which it will deliver **digital transformation services to SMEs and public organizations of the health and pharma sector using AI technologies**. Health Hub guarantees that health companies and public administration have access to know-how, training, technologies, infrastructure, and laboratories to improve and accelerate their digitalization. Health Hub will reach out to more than 2,000 beneficiaries and support the digital transformation of at least 160 by providing a complete set of services.



LIVINGTRAC - Health and Sustainable Living, Digital Transformation and Cybersecurity

The Hub will improve the competitiveness of the national/local economy by stipulating digital transformation, leading to specialization based on local strengths and needs. Its expected impact to the regional/national economy is that it will assist in creating new business models, allow industry to be more productive, provide workers with new skills and support the decarbonization of the economy – specifically it will:

- ⇒ allow businesses to create, pool and use **data** to improve products and compete internationally
- ⇒ instill a more **circular** approach toward a cleaner, more competitive economy, industry, SMEs ecosystem
- ⇒ assist in unlocking **investment** (incl. EU & Member States funding, private, etc.) in innovation based on what the country and its regions want to focus on



07 Energy & Mobility

The RDI has placed high priority to participating in initiatives that improve the sustainability, security and competitiveness of the energy and transport industry.

Proposals submitted under this domain seek to shape the necessary technological transformations to achieve smart, safe, and competitive mobility systems and solutions. This section presents some of the most high-impact proposals submitted in these thematic domains.

URBANE - Upscaling innovative green urban logistics solutions through multi-actor collaboration and pi-inspired last mile deliveries

URBANE brings together a multidisciplinary group of expert partners to co-develop novel last-mile delivery solutions combining green automated vehicles and shared space utilization models. URBANE will support the transition path towards effective, resilient, safe and sustainable last-mile transport, through four Lighthouse Living Labs (Helsinki, Bologna, Valladolid, Thessaloniki) that will demonstrate efficient, replicable and socially acceptable, innovative, last-mile delivery solutions.

NAUTILUS-AI - Explainable AI for human/robot-self-driving-vehicle collaboration for industry 4.0 long term evolution

With the promise to revolutionize our world, by supporting a 90% drop in accidents and a 60% drop in CO2 emissions, fully-autonomous self-driving vehicles (ASVs) have become a highly-researched topic. However, current ASV deployments have encountered low reliability and adaptivity. NAUTILUS-AI, via leveraging the benefits of autonomous orchestration of cloud, edge, network, and AI resources, aims to demonstrate in three real-world pilots, a novel, flexible and scalable architecture, suitable for latency critical applications that demand high reliability, atomicity, transparency, energy efficiency and security.



Quick facts

Proposal	Partners	Participating Company
NAUTILUS-AI	17	Uni Systems (coordinator) ACS Courier
PANACEA	17	Uni Systems
URBANE	41	ACS Courier



Awarded project

PANACEA – Practical and effective tools to monitor and assess commercial drivers' fitness to drive

Vision & goals

Driving under the influence of drugs or alcohol is extremely dangerous, increasing the risk of traffic accidents or fatality. Driver fatigue is another major cause of road accidents. This is why testing a driver's fitness is important. In this context, the EU-funded PANACEA project will design, develop and test a holistic driving ability assessment system for over 90 truck and taxi drivers, courier service riders and other commercial drivers across Greece, Spain and Sweden. Paired with cloud-based countermeasure and coaching solutions, the system could be used pre-driving, during driving, and at the roadside. It could monitor drivers to detect alcohol, licit (barbituric), illicit (methadone replacement) drugs, fatigue, stress, and cognitive load. The project will provide policy and legislative recommendations for commercial transportations. Specifically, the project has been designed to achieve the following **outcomes**:

- ⇒ Create commercial driver-oriented, health-based and Use Case (UC)-driven health monitoring and assessment methodologies and technical solutions
- ⇒ Create operational and tactical countermeasures and integrate them to an acceptable, effective, adaptable countermeasures' system
- ⇒ Propose specific recommendations in relation to alcohol consumption, substance use and fatigue
- ⇒ Increase saved lives will be estimated by 8%, 2 points QALY increase and positive change in health, cost and logistics/ transportation benefit (CEA/CBA)



Partners

PANACEA has seventeen (17) partners from eight (8) countries coming from multidisciplinary fields:

- **Austria:** AIT Austrian Institute of Technology, Virtual Vehicle Research
- **Belgium:** European Transport Safety Council
- **Germany:** Roadpol European Roads Policing Networks
- **Greece:** Centre For Research and Technology – Hellas (CERTH), Uni Systems
- **Italy:** Deep Blue, CTLUP
- **Netherlands:** Foundation Wegemt - A European Association Of Universities In Marine Technology And Related Sciences
- **Spain:** DATIK, Acondicionamiento Tarrasense Asociacion
- **Sweden:** Statens VAG – OCH Transportforskninginstitut, Senseair, Transdev Sverige, Chalmers Tekniska Hogskola
- **UK:** Loughborough University

Uni Systems is responsible for the systems' integration. In addition, ACS is participating as third linked party in the project.

Expected Business Impact for Uni Systems & stakeholders

- ⇒ Uni Systems will access and test a state-of-the-art technology in the area of IoT, and improve knowledge on FIWARE solutions
- ⇒ The project is expected to have a significant impact to a wider range of stakeholders related to road safety as well businesses in the transportation and logistics sectors



08 Security for Society & Cybersecurity

A secure economy and society is at the heart of EU policy priorities, and the RDI has responded to security challenges with numerous research and innovation initiatives.

Proposals submitted under this domain address the current security concerns that society, industry, and economy face, incl. cybersecurity and data safety, as well as disaster risk reduction and resilience, especially in the aftermath of the COVID-19 global pandemic.

VANGUARRD-MOBILELAB - Vertical advantageous nanotechnologies' genius and unprecedented assets, recognizing and relaying data mobile laboratory

The COVID-19 crisis has demonstrated that the ability to rapidly identify pathogens/viruses on scene is crucial to ensure optimal risk assessment/management, and efficient counter measures. In the EU Civil Protection policy framework, mobile labs are increasingly becoming part of crisis responses and recovery plans. MobileLab will develop a solution that brings a rapidly deployable diagnostic capacity close to the crisis area, including: innovative technologies for detection of infectious agents; information/data handling to provide support for decision makers, and a proof-of-concept for interaction between EU partners to enable end-users via high-end tools/equipment, personnel training, etc.



MIGRATE - Managing risks associated with extreme climate events

MIGRATE targets the development of processes, tools and solutions, spanning from early warning systems to long term adaptation and resilience building, in support of Disaster Risk Reduction associated with extreme climate events incl. forest fires, floods, and droughts. It will develop (a) a unified resilience process framework, (b) advanced services incl. new communication tools/apps for better preparedness/response, (c) monitoring capabilities involving innovative data collection and harmonization, satellite data, AI tools, algorithms, sensors, and (d) decision making tools for 1st/2nd responders. MIGRATE will be demonstrated in real-case scenarios (in Germany, Greece and Spain) and will perform training to responders, authorities, and populations.

SECUREFLOWS - Decision support improvement by intelligence, sensing and imaging solutions

The current situation in courier flows shows major gaps in security due to the lack of solutions for high volume parcel screening for illicit goods. Current procedures are based on risk analysis through research, experience, intelligence, knowledge about previous events and are carried out by people, thus personnel capacities are a limiting factor. SecureFlows provides a solution to increase the control rate using data from courier and postal companies coupled with information from open-source available data and combination of X-Ray (state of the art) and Muon (novel) scanning technologies – all are fed into an advanced AI-based decision support system.



HEIMDAL - Highly efficient monitoring platform for land & sea border surveillance

HEIMDAL's main goal is to shield the EU periphery from illegal cross-border activities which extend over terrestrial and maritime zones, by delivering integrated, all-domain Intelligence, Surveillance and Reconnaissance technologies to assist LEAs in strategic, operational and tactical missions, also ensuring cost-efficiency, scalability and futureproof adaptability, delivered under the novel ISR-as-a-Service business model. HEIMDAL will, for the first time, employ progressive stratospheric propulsion technologies: a self-sustained, solar-powered operation and two different propulsion-assisted unmanned high altitude platforms will be developed. HEIMDAL will develop a commercial solution that will be tested in close cooperation with Frontex, which, along with other border police agencies, will have access to the results to perform more tests.

CONNECT - Continuous and efficient cooperative trust management for resilient CCAM

CONNECT defines a trust reasoning framework based on which involved entities in the CCAM ecosystem can establish trust for cooperatively executing safety-critical functions. It will enable both a) cyber-secure data sharing between sources in CCAM that had no/insufficient pre-existing trust relationship, and b) outsourcing tasks to the cloud in a trustworthy way. By coupling the Zero Trust security principle with the need of "Never Trust, Always Verify", CONNECT enables continuous authorization and authentication prior to be granted access to data or resources for all users, devices and systems in the CCAM ecosystem. CONNECT emerges as the cornerstone of future smart transportation, as it will usher new levels of safety and connectivity.

Quick facts

Proposal	Partners	Participating Company
ANCHOR	14	Uni Systems
ASSURED	14	Uni Systems
CENTAURO-AI	18	Uni Systems (coordinator)
CONNECT	17	Uni Systems
HEIMDAL	19	Uni Systems (coordinator)
LEAFOS	22	Uni Systems
MIGRATE	30	Uni Systems
PAEONIA	13	Uni Systems
PALISADE	13	Uni Systems (coordinator)
PUZZLE	13	Uni Systems
REWIRE	13	Uni Systems
SANCUS	15	Uni Systems
SECUREFLOWS	19	ACS Courier Uni Systems
SPIDER	19	Uni Systems
VANGUARD- MOBILELAB	17	PROBOTEK Uni Systems



ANCHOR - A security and patch management framework for the continuous, holistic and reputable open software and hardware certification

ANCHOR envisions the development of a cybersecurity platform which will ensure the early detection and mitigation of cyber threats aiming to open-hardware/software vulnerabilities. ANCHOR will exploit a Knowledge Plane of metadata generated from application behavioral patterns and operations to determine appropriate security policies and properties to block potentially harmful instructions.

PAEONIA - Autonomous AI-self security

PAEONIA's vision is to implement diverse cybersecurity services with autonomous AI capabilities and enforce real-time recovery actions against the large-scale and polymorphic 6th generation of cyberattacks. PAEONIA's results will contribute to the novel concept of autonomous AI-self security and will be validated in the areas of: i) overseas maritime transport; ii) governmental healthcare services; and iii) environmental protection & electromobility services.



CENTAURO-AI - Cybersecure reinforced strategy with neuromorphic Artificial Intelligence

In recent years there has been an exponential increase of attacks against governments, organizations and individuals who hold and process personal data or manage critical facilities, which leaves no safe hub for data owners and device users, or the broader digital services and network ecosystems. CENTAURO-AI aims

to offer sophisticated AI cybersecurity systems, and overcome issues related to lack of speed and capacity to handle high volume of incoming data. It will introduce novel AI architectures and utilize new hardware and software technologies referred to as Neuromorphic Computing. The full platform will be demonstrated in four large-scale applications (satellite cybersecurity, critical infrastructure and power grids, smart vehicles, healthcare).

Awarded project

SANCUS - Analysis software scheme of uniform statistical sampling, audit and defense processes

5G is expected to transform how we interact with our day-to-day surroundings, involving trillions of Internet of Things (IoT) devices, smart cars, homes and buildings, augmented and virtual reality, healthcare and mission-critical applications, among others. The fundamental structure of our cyber ecosystem is prone to several – yet undiscovered – security threats, and the advent of new communication technologies will not only accentuate existing threats, but also introduce new ones, with unpredictable impacts on industrial, financial, societal systems, unless preemptive action is taken. The important question is how to protect the overall network environment from potentially insecure – yet necessary – components. SANCUS – the Roman god of trust – draws a solution by: i) introducing the security-vs-privacy-vs-reliability efficiency trade-off metric, ii) designing and developing automated security validation and verification solutions using new AI-driven analysis methods with improved accuracy, and iii) establishing intelligent game theoretic decision-making frameworks to facilitate automated cybersecurity optimization.



Awarded project

SPIDER - A cybersecurity platform for virtualized 5G cyber range services

The increasing complexity of the telecommunication domain's cyber threat landscape intensifies the need for new security solutions and for improving the technical security skills of experts and non-experts in the multi-service environments coming with the domain's 5th generation (5G). At the same time, attack mechanisms are increasingly sophisticated, pervading critical infrastructures despite billions of euros invested in cybersecurity measures. SPIDER delivers an innovative Cyber Range as a Service platform which will act as a unified facility for (i) testing new security technologies, (ii) training modern cyber defenders in near real-world conditions, and (iii) supporting organizations and relevant stakeholders in making optimal cybersecurity investment decisions. SPIDER's gamified learning environment enables trainees to master how to use domain-specific cyber protection technologies and collaboratively improve their ability in handling incidents and risks.



PALISADE - Privacy-by-design platform for trust and accountability in transnational data processing

Processing on personal data is a sensitive topic for the European industry. Actors not only need to satisfy their computation requirements and operational constraints of their processes, but also are mandated to cope with extensive legal frameworks protecting the personal data of EU citizens. PALISADE will leverage a privacy-preserving transnational collaboration on the processing of personal data and will prototype and demonstrate a

Privacy-by-design platform ensuring: the territoriality of exploited personal data, the privacy accountability over the committed handling, the EU-citizen consciousness, and its continuous innocuity. The platform will be evaluated against three use-cases from three different verticals: energy, health, and banking sectors.

Awarded project

PUZZLE - Towards a sophisticated SIEM marketplace for blockchain-based threat intelligence and security-as-a-service

PUZZLE will implement a highly usable cybersecurity, privacy and data protection management marketplace targeted at SMEs&MEs that enables them to monitor, forecast, assess and manage their cyber risks through targeted cybersecurity services, increase their cybersecurity awareness through: efficient heterogeneous information processing, establishment of knowledge sharing with other SMEs&MEs, and extracting insights based on advanced analytics. PUZZLE will support vulnerabilities and threats assessment in a collaborative manner based on the homogenization of data provided by the SMEs&MEs, which will take place through blockchain-based technologies, and will provide automated defensive strategies deployment mechanisms.



09 Digital Government & Society

Digital technologies transform – faster than ever before – all sectors of the society. Especially following the COVID-19 pandemic, the need to achieve a faster digital recovery, is imperative.

While the digital transformation is at full speed, the RDI has already participated in numerous research and innovation initiatives that aim to develop, demonstrate and deploy key digital technologies that enable a faster transformation in various areas of the society and services to citizens.

MEDIASHIELD - Open distributed digital media verification to anticipate disinformation threats via AI and to improve the accountability of the EU media organizations

The effect of falsified information that is deliberately and often covertly spread can have sizeable impacts on modern societies. MEDIASHIELD will research, develop, demonstrate, evaluate and exploit a new framework for countering disinformation threats in the operational environment of media organizations, and will develop an open software ecosystem of disinformation-countering AI tools. Moreover, a new model for Corporate Digital Responsibility will be designed to strengthen the corporate accountability of media organizations against disinformation.



Awarded project

eThemisID - Integrating the Greek justice system with eIDAS and e-signature services

The Greek Justice System (Council of State, Supreme Civil & Criminal Court, Court of Audit), has made clear steps toward digitization. However, a significant issue is its ability to integrate with existing identification and authorization services in national and pan-EU level. The scope of eThemisID is to: a) integrate the necessary components with existing systems to allow the Justice System to offer eIDAS and e-signature services to its EU-wide end-users and b) extend the national eIDAS node to offer rich authentication/authorization services to a large number of citizens.

More info here:

<https://ethemisid.eu/>

Quick facts

Proposal	Partners	Participating Company
ETHEMISID	5	Uni Systems
GLASS	12	Uni Systems (coordinator)
INGOV	12	Uni Systems (coordinator)
MEDIASHIELD	17	Uni Systems
VERITAS.EU	15	Uni Systems (coordinator)



VERITAS.EU - A verifiable and tested approach for fighting disinformation at end user site

Veritas.eu aims to develop a solution that will help:

- i) detect fake news and disinformation patterns, using AI tools;
- ii) concede fact-checking validation;
- iii) endorse content confirmation by importing and analyzing comments on social media;
- iv) classify content into related domains to improve the understanding of trends in disinformation;
- v) promote user awareness by creating an explainable AI framework.

The final product will be a website offering a suite of APIs in a pipeline, which will allow interoperability with major news publishers and selected social media platforms. To create and verify this technological concept, a living lab-like user-centered open-innovation ecosystem will be established at broad European level, starting from 11 countries.



Awarded project

InGOV - Inclusive governance models and ICT tools for integrated public service co-creation and provision

Today citizens require accessible, user-friendly, personalized, and integrated public services that match their needs. At the same time, trust in the public sector deteriorates. The vision of InGOV is to provide innovative ICT-supported governance models as well as mobile apps and virtual assistants including chatbots, which will enable stakeholders' collaboration in co-producing inclusive and accessible Integrated Public Services (IPS) thus increasing trust and satisfaction. The results will be piloted in Malta to modernize the digital family household public service (affecting 200,000 households), in Austria to collect tourism tax (affecting 3,200 accommodation providers), in Greece to digitize the disabled card renewal service (benefiting 11,500 disabled, low-income citizens) and in Croatia to create AI-driven virtual assistants and services (affecting 32,000 citizens).

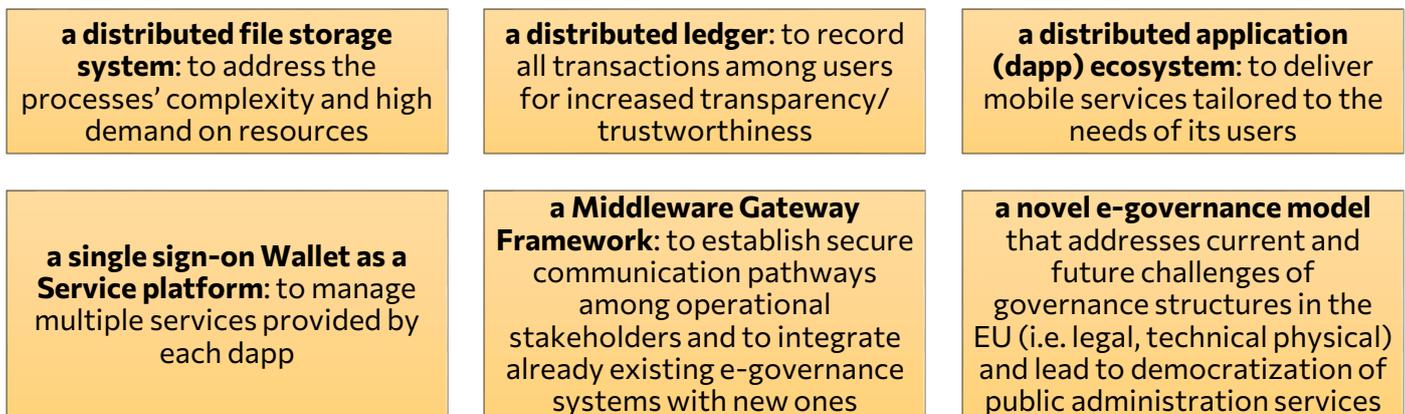


Awarded project

GLASS – Single sign-on e-governance paradigm based on a distributed file exchange network for security, transparency, cost effectiveness and trust

Vision & goals

The rapid growth of Information and Communication Technology (ICT) and its ubiquitous presence in our everyday life has significantly affected the way government services are delivered today and poses challenges to safeguard the data confidentiality and integrity of e-gov services. The vision of the GLASS project is to place EU citizens in control of their personal information and streamline access to eGov services across Member States. Aligned with the EU eGov Action Plan 2016-2020 and the EU Digital Single Market Strategy, the project's main goal is to use state-of-the-art technology and introduce a citizen-centric e-governance model that enables beneficiaries to participate in a network for big data exchange and service delivery, which is by design digital, efficient, cost-effective, interoperable, cross-border, secure and promotes the once-only priority. Specifically, it combines the following **characteristics**:



Partners

GLASS brings together twelve (12) interdisciplinary partners from seven (7) countries:

- **Belgium:** European Electronic Messaging Association
- **Cyprus:** Ubitech Limited, Suite5 Data Intelligence Solutions
- **Germany:** Fraunhofer
- **Greece:** Uni Systems, University of Patras, Ministry of Digital Governance
- **UK:** Edinburgh Napier University
- **Portugal:** PDMFC, Ministry of Justice
- **Turkey:** Teknoloji Arastirma Gelistirme Endustriyel Urunler Bilisim Teknolojileri Sanayi, Istanbul Metropolitan Municipality

Uni Systems is the coordinator of the project. In addition, it has the responsibility for the platform integration and participates also in the Dapp ecosystem and the execution design of the pilots.

Expected Business Impact for Uni Systems & stakeholders

- ⇒ Uni Systems gets the opportunity to access and test a state-of-the-art technology in e-wallets, to formulate strong alliances with top of the range players in the area of blockchain, and extend its business line with services for the financial, government and consumer markets.
- ⇒ Stakeholders incl. government, citizens' groups, businesses, and civil society, will be provided with the necessary governance model to allow a truly exercise of fundamental rights, such as free movement, right to know who has access to what data, etc.



10 Industry 4.0

Progress in digital technologies has shaped the way industry develops and creates new products and services. Their role in enhancing the economic competitiveness of Greece and the EU broadly and in creating more resilient supply chains becomes even more obvious following the COVID-19 pandemic.

The RDI is at the forefront of efforts demonstrating the value of cutting-edge tech (advanced 5G networks, Artificial Intelligence-AI, VR/AR/XR, robotics) for industry transformation.

AMELIE - AI-boosted embodied intelligence to enhance local human-robot interaction

Productivity optimization is a major priority across industry, hence adoption of collaborative, (semi) automatic robotic systems is growing; yet, balancing conflicting strategies to maximize robotic efficiency remains a challenge. Following growing industrial adoption of Cognitive Robotics and AI, AMELIE envisions a holistic distributed hardware & software solution that can be applied to existing worksite robots enabling: i) recognition and reaction to risk factors in collaborating with human workers; ii) real-time monitoring of variables affecting overall process productivity; and iii) workload optimization by automating job scheduling for human and robotic activities.

PRIS - AI-powered replicants for immersive systems



AR/VR, or its superlative, eXtended Reality (XR), can actively enrich the human view of the world and add real-time ease of access and visualization of information. PRIS aims to create a fully immersive XR framework leveraging the power of AI-enabled models and AI-assisted activities to upgrade the

way everyday tasks are met, such as industrial human-machine collaboration, education of people with special needs, or ways to instantly access and visualize data.

Awarded project

5G-INDUCE - Open cooperative 5G experimentation platforms for the industrial sector NetApps

5G-INDUCE focuses on the development of an open platform for the deployment of advanced 5G NetApps. Tailored made applications can be designed and deployed, without any indirect dependency through a cloud provider, for the benefit of the Industry 4.0 vertical sector, as one of the fastest growing and most impactful sectors in EU economy. The platform is integrated over 3 5G Experimentation Facilities in Spain, Greece, and Italy.

Quick facts

Proposal	Partners	Participating Company
5G-INDUCE	21	Uni Systems
AMELIE	17	Uni Systems (coordinator)
PRIS	17	Uni Systems (coordinator)



11 IoT & Big Data

Recent developments in sensor networks and the ubiquity of the Internet of Things (IoT) have highlighted even more the need to swiftly develop cloud to edge to IoT technologies, methods, and platforms to support applications across business sectors. Data are collected faster than ever before and they have become the new fuel for the economy and an asset to address our societal challenges.

The RDI has invested significant effort to the development and deployment of next-generation cloud/edge computing and data technologies and infrastructures that constitute key success factors driving the digital transformation of our economies and societies.

VERGE-OS - Open meta-operating system platform for versatile edge IoT infrastructures over heterogeneous networks

VERGE-OS envisions an open cloud-native meta-operating system platform that provides: i) an orchestration umbrella through the tight integration of state-of-the-art IoT, edge/cloud computing, and networking platforms; ii) a secure and trusted framework for IoT device and system authentication, data sharing and application deployment; and iii) targeted enhancements in each of these layers to meet the interfacing requirements of the system-as-a-whole. The concept is tested over a mature environment that integrates diverse IoT application areas in manufacturing, farming, logistics, mobility, and energy.

FUTURENETT - Future open distributed and trustful IoT

FutureNETT aims at developing ad hoc IoT-edge networking mechanisms for enabling a self-sustainable network of heterogeneous peer entities under the “umbrella” of beyond 5G/6G communication systems, allowing data exchange based on industry standards and open-source solutions. To ensure trust between participating entities, a reputation-based trust system is proposed, based on crowdsourcing, while blockchain and smart contracts as well as neuromorphic AI are also adopted. FutureNETT aims to bring the human to the center of operations/decisions, by implementing an Explainable AI module, to provide human-comprehensible outputs of AI processes. FutureNETT will be validated in use cases across vertical sectors, incl. smart farming, digital healthcare, energy and critical infrastructure, intelligent logistics and Industry 5.0 scenarios.

Quick facts

Proposal	Partners	Participating Company
5GCOCOS	23	Uni Systems PROBOTEK
ANOSIS	18	Uni Systems
DATAVAULTS	17	Uni Systems
ELEGANT	11	Uni Systems
FUTURENETT	33	Uni Systems (coordinator)
INDATA5G	17	Uni Systems
ORCHESTRA	20	Uni Systems
RAINBOW	15	Uni Systems
VERGE-OS	22	Uni Systems (coordinator)
ARMONIA	4	Uni Systems (coordinator)



ANOSIS - A hyper-dynamic meta operating system for a secure, cognitive, disaggregated and green IoT-edge-cloud continuum

ANOSIS will build a distributed meta-OS, called FractOS, which will be based on a novel, fully decentralized secure system architecture providing low latency, energy and performance efficiency, and which will be empowered by an intelligent platform. ANOSIS will facilitate the development and automate the secure, transparent, and efficient deployment of highly dynamic, large-scale and data-intensive hyper-distributed applications, and will analyze from a business perspective the meta-Edges as a new marketable resource. ANOSIS will demonstrate 3 high impact use cases (automotive production lines, architectural, engineering and construction industry, future smart energy grids), and the platform will be opened up to selected SMEs in order to evaluate the developed technologies in terms of functionality and performance.

ORCHESTRA - Ultra-low power co-processors using hybrid electro-optical solutions for the next generation secure edge processing

According to IBM, by 2025, we expect over 38 billion connected IoT devices that can generate over 90 zettabytes of data. Sending this volume of raw information to data centers can cause energy, bandwidth, and latency issues. Edge Computing promises to surmount these challenges relying on powerful, yet low-energy consumption, microprocessors. ORCHESTRA brings such a solution of unparalleled performance and energy efficiency that aspires to develop high-performance ultra-low-power, secure processors to AI, Data & Robotics solutions, by incorporating emerging silicon photonic neuromorphic technology.

Awarded project

ELEGANT - Secure and seamless edge-to-cloud analytics

ELEGANT aims to solve the ever-increasing problem of software fragmentation in the IoT/Big Data interoperability domain, which prohibits the unification of these two ecosystems severely limiting the ability to regard them as a single system and tune the whole infrastructure towards defining its

a) Performance, b) Energy Efficiency, c) Security, d) Reliability, and d) Dependability (PESRD) requirements. ELEGANT proposes a novel software programming paradigm, along with an associated set of methodologies and toolchains, to program IoT and Big Data frameworks using a unified programming framework. The proposed solution will be evaluated against pre-defined KPIs across a wide range of operational use cases from four distinct domains: health, automotive, smart metering, and video surveillance.

Awarded project

RAINBOW - An open, trusted fog computing platform facilitating the deployment, orchestration and management of scalable, heterogeneous and secure IoT services and cross-cloud apps

RAINBOW falls within the bigger vision of delivering a platform enabling users to remotely control the infrastructure that is running, potentially, on hundreds of edge devices (e.g., wearables), thousands of fog nodes in a factory building or flying in the sky (e.g., drones), and millions of vehicles travelling in a certain area or across Europe. It addresses the need to timely process the ever-increasing amount of data continuously gathered from heterogeneous IoT devices. RAINBOW will be demonstrated in various real world and demanding scenarios, such as automated manufacturing (Industry 4.0), connected vehicles and critical infrastructure surveillance with drones.



INDATA5G - Building the ORAN 5G-assisted industrial data driven environment

InData5G aims to help the European manufacturing sector undergo the much-needed structural transformation towards sustainable competitiveness, helping reap the substantial benefits of NP-5G deployments with on-premise secure and resilient Edge infrastructure, along with a set of supporting software components and trusted data sharing models. The goal of the developed NP-5G system is to be easily deployable over all types of industrial networks, and enable trusted, sustainable and circular manufacturing value chains.

5GCOCOS - 5G to connect remote areas

5G-COCOS aims to support low-carbon solutions for the development, rejuvenation and diversification of remote areas by fostering the decentralization of communication and computational capacity and the “greenification” of last-mile IoT and edge computing. It will allow for low-footprint smart farming and quantification of environmental impact to mitigate human-induced pollution and climate change and monitor protected ecosystems. Edge computing in conjunction with cellular-enabled sensors, gateways, drones and portable base stations will allow for the showcasing of the framework’s quintessential functionalities in terms of connectivity extension in forested areas, remote and mountainous farming establishments and critical water management facilities.

Awarded project

ARMONIA - Self-configured and unified access and metro network

To support the increasing traffic load and the requirements of emerging applications the different segments of a network need to be redesigned and upgraded, while legacy and new equipment should be (re)-configured, a process that involves several manual operations. ARMONIA is a self-configured and unified access and metro network that senses itself, and dynamically acts to (re)optimize itself in almost real time. The optical and IP equipment of the different segments of the network converge and are jointly and optimally controlled, leveraging the software defined networking (SDN) and network functions virtualization (NFV) technologies. Monitoring information from the network is collected and analyzed with big data analytics methods. This, in turn, is used by dynamic algorithms that decide how to adapt and dynamically optimize the unified network.

Awarded project

DATAVAULTS - Persistent personal data vaults empowering a secure and privacy preserving data storage, analysis, sharing and monetization platform

Both large companies and SMEs acknowledge the fundamental value of Big Data to cause disruptive change in markets and business models. Nevertheless, the growth of the data economy is hampered by the lack of trusted, secure and ethical-driven personal data platforms and privacy-aware analytics methods. DataVaults aims to deliver a framework and a platform that has personal data, coming from diverse sources in its center and that defines secure, trusted and privacy preserving mechanisms allowing individuals to take ownership and control of their data and share them at will, through flexible data sharing and fair compensation schemes with other entities (companies or not).



12 Health

With the world still challenged by the COVID-19 pandemic, it has become clear that health care systems play a critical role in our societies and that research and innovation are powerful tools to respond effectively to challenges relating to public health, mental health and general well-being of citizens.

The RDI has particularly focused on research and innovation activities aiming to unlock the full potential of the digital transformation of health and care systems, via projects that involve all stakeholders - patients, health care professionals, public health authorities, etc.

AEFORIA - Integrated, holistic, AI-enabled framework for a sustainable, personalized dietary behavior

AEFORIA aims to develop and deliver a personalized framework for sustainable guidance on dietary behavior change, while facilitating the consumers and policy makers in adopting sustainable practices according to the principle of “making the sustainable choice the easy choice”. AEFORIA focuses on validating the integrated solution in five pilot sites, combining a large amount of multivariate data regarding nutrition, demographics, socio-economics and individuals’ condition, along with environmental footprint, local production and cultural adaptation. AEFORIA will provide innovative tools, structures and platforms towards new and localized policy pathways and personalized, healthy, but also sustainable dietary behavior modification of the dietary habits of the European population.

Quick facts

Proposal	Partners	Participating Company
3D-BIOPERIODONTIS	4	Uni Systems
AEFORIA	28	Uni Systems
AIRMED	17	Uni Systems
ALAMEDA	15	Uni Systems
ARTEMIS	11	Uni Systems
CARDEA	16	Uni Systems
ECARE	2	Uni Systems
FAIRCARE	20	Uni Systems
ONCOREC	28	Uni Systems
SMARTEMBRYO	3	Uni Systems

Proceeding to Stage 2

ECARE - Digital solutions for frailty prevention in old adults

Population ageing has profound implications for the planning and delivery of health and social care. Ageing, frailty and loneliness constitute overlapping conditions submitted to multiple health and care interventions. Research experiences suggest that frailty can be considered a manageable condition, and therefore, there may be opportunities along its pathway to halt, reverse, manage and/or prevent its adverse consequences. The objective of eCare is to launch a Pre-Commercial Procurement call for tender to deliver disruptive digital solutions for the prevention and comprehensive management of frailty to encourage independent living, wellbeing and to relieve health and care services budget pressure.



ONCOREC - An evidence-based cancer-specific recommendation engine for participatory policy and decision making on health systems and services, preventative measures and treatment pathways

With cancer disease projected to become the leading cause of death within its grounds, EU has developed its Beating Cancer Plan, endeavoring to tackle the entire disease pathway. Access to, and robust processing of, health data can unleash the potential of AI-based modelling tools, facilitating policy and decision making in the areas of cancer prevention measures, treatment services, and health care system planning. ONCOREC pledges to build upon large swathes of data accessed via privacy-preserving methods, developing trustworthy modelling and planning tools that will allow users to make informed, data-driven decisions with regard to cancer prevention, diagnosis and treatment. Furthermore, ONCOREC will develop participatory mechanisms to allow citizens and patients perspectives to be included within decision/policy making processes.

CARDEA - Cancer patient monitoring for optimized palliative care

Despite their importance for patients, their families, and EU in general (e.g. costs), care services for cancer patients are based on scattered approaches which are not patient-centric and are divided across multiple different organizations (hospitals, home, exercise centers etc.) and individuals (physicians, psychologists, caregivers, family members etc.). CARDEA's main focus is to transform existing isolated supportive, survivorship, palliative and end-of-life services cancer care services and connect them inside a wide ecosystem which facilitates collaboration and promotes the creation of innovative cancer care services for patients, family members, healthcare professionals etc. CARDEA's three patient-centric cancer care services will be tested in three large pilots.



CARDEA's three patient-centric cancer care services will be tested in three large pilots.

AIRMED - Advancing atrial fibrillation diagnosis, prognosis, and treatment by exploiting responsible artificial intelligence

AIRMED aims to deliver a set of responsible (usable, explainable, trustworthy, transparent, secure, fair and ethical) AI-empowered solutions that will be delivered to healthcare professionals empowering them to more accurately, efficiently and promptly identify and assess early warning signs indicating the onset of Atrial Fibrillation (AF), to prognosticate an individual's future AF disease course and the associated stroke risk prediction, and to make better informed decisions with regards to the personalization of recommendations and (invasive and/or non-invasive) healthcare interventions. AIRMED will test the AI-empowered solutions through 4 clinical validation studies.



Awarded project

ALAMEDA – Bridging the early diagnosis and treatment gap of brain diseases via smart, connected, proactive and evidence-based technological interventions

Vision & goals

The care of patients with brain disorders is complex and manifestations of certain diseases could seriously impair the quality of life of patients and their care-givers. Regular rehabilitation treatment assessments are essential to ensure that medical interventions are impactful. Different brain diseases pose different challenges on clinicians, and patients respond differently to medication or rehabilitation protocols. ALAMEDA will research and prototype the next generation of personalized AI healthcare support systems for people with brain diseases and disorders, specifically focusing on the needs of Parkinson's, MS and Stroke (PMSS) patients' rehabilitation treatments. ALAMEDA innovations are anchored at the integration of lifestyle retrospective data as well as new streams of patient monitoring data, via new methods during every-day activities, incl. sleep behavior, advanced data analytics and AI recommendation services. The success of such applications will provide clinicians with the opportunity to modify interventions based on personalized data recordings that could include both pharmacological and non-pharmacological therapeutic options, such as exercise regimens. ALAMEDA's key **goals** are:

Brain disease rehabilitation treatment assessment	assisting the healthcare system to increase capacity and adapt to quickly increased understanding of the value of specific measures/treatment programs
Lifestyle and Medical Data Sources	implement new Big Data analytics and AI algorithms combined with advanced computational methods to develop new knowledge to improve quality of life of patients of brain diseases during medical care and support
Innovate existing practices	innovate in rapid iterations to experiment with latest technologies, in real-world use cases, engaging all stakeholders in the brain diseases healthcare ecosystem
Measure Impact Value	Assess impact of changes by measuring the value that the proposed digital transformation contributes to healthcare systems and in creating new business models

Partners

ALAMEDA brings together twelve (14) interdisciplinary partners from seven (7) countries:

- **Cyprus:** EDEX – Educational Excellence, Catalink
- **Greece:** Institute of Communication and Computer Systems, National & Kapodistrian University of Athens, Enora Innovation, CERTH
- **Italy:** EY Advisory, Fondazione Italiana Sclerosi Multipla FISM Onlus, Pluribus One
- **Romania:** Universitatea Politehnica din Bucuresti, Spitalul Universitar de Urgenta Bucuresti
- **Spain:** Wise Angle Consulting
- **UK:** Wellics
- **Luxembourg:** Uni Systems

Uni Systems is responsible for the systems' integration, AI toolkit development, and business exploitation.

Expected Business Impact for Uni Systems & stakeholders

- ⇒ Uni Systems will access and test a state-of-the-art technology in remote health AI based applications, formulate strong alliances with top players in the area of e-health, and extend its business line with services in the health sector
- ⇒ The project is expected to have a significant impact to a wide range of stakeholders, incl. hospitals and health care providers of all kinds (doctors, paramedical stuff, associations, at-home health services)



FAIRCARE - Framework of artificial intelligence and reuse of data in the context of emergent incident care

FAIRCARE focuses on combining the use of remote monitoring of patients at home, electronic patient record data, Artificial Intelligence, and advanced virtual caregivers, to predict and prevent emergent incidents in care, and to facilitate better care provision when such incidents occur. The accurate, personalized incident assessment/triage and sensible resource allocation will improve health outcomes, while at the same time lower the per-case cost and minimize delays/overheads. Virtual Caregivers can lower the burden of medical/nursing staff and improve the completeness, timeliness and accuracy of the data collection and patients' monitoring/screening. In addition, AI and Machine Learning can provide incident assessment/triage and decision support based on patient historical and continually acquired data. Finally, modern network approaches such as private

blockchains can provide an interoperability and data sharing environment that is both efficient and capable of preserving patient privacy.



ARTEMIS - Assistive human robot teams for ethical and safe missions and interactions

ARTEMIS proposes to research and develop scientific methods and technological frameworks that will enable human-robot caregiving teams to execute collaboratively coordinated personal-care assistive tasks while guaranteeing the safety of the care-receiver and the mutual trust between human-robot. ARTEMIS targets the most important and frequent tasks of nurse assistance in hospitals, healthcare centers, and elderly care homes and its outcomes will enable service robots to expand their applicability to a broad range of tasks in the healthcare sector, thus contributing to the sustainability of the healthcare system and the quality of the services. The robotic functionalities, skills, and dexterity that will be developed are transferable to a broad range of applications outside the field of healthcare (e.g. industry, hospitality, etc.).

Awarded project

3D-BIOPERIODONTIS - Bioabsorbable three-dimensional (3D) printed scaffolds for personalized treatment of periodontitis

Periodontal disease is an infection of periodontal tissues caused by the colonization by pathogenic microorganisms infecting the tooth's root surface and tissue. It affects a large proportion of the population, and results in worldwide productivity losses of ~\$54 billion yearly. Despite encouraging results, previous treatment techniques have not succeeded in achieving the ultimate goal of periodontal therapy, namely the complete regeneration of lost periodontal tissues and the maintenance/improvement of aesthetics. Of new periodontic regeneration biomaterials, the most important seems to be the development of new 3D printed scaffolds, which reproduce precisely the complex morphology of periodontal damage and tissue organization for each individual patient. The 3D-BioPerioDontis project aims to study new biomaterials for the fabrication of innovative bioabsorbable 3D printed scaffolds for personalized medicine for periodontitis, which will act simultaneously as drug delivery systems for controlled delivery of APIs.



13 Environment & Agriculture

Balancing environmental, social and economic goals and setting economic activities on a path towards sustainability is a key priority for Greece and the EU more broadly.

The RDI fully supports the green transition of the economy and society in order to reduce environmental degradation and better manage natural resources, in full alignment with the UN's Sustainable Development Goals and the European Green Deal.

PUREAIR - Purified indoor air quality through AI-driven environment awareness

PureAir aims to develop an integrated and low-cost solution for monitoring and improving indoor air quality that can be deployed in homes, workplaces and public facilities, and can lead to an increased understanding of indoor air pollution and its effects on health. It will develop novel low-cost stationary and wearable devices for air quality monitoring, exploiting AI to understand and predict the pollution effects on biomarkers and diseases, and implementing smart air disinfection and purification devices (e.g. HVAC, robots) and materials to improve air quality, powered by automatic decision support and personalized guidance. The benefits of the system in monitoring, understanding and mitigation will be evaluated in three pilot applications and a clinical study across three countries (Lithuania, Romania and Greece).

FENICE - A collaborative, co-creative, federated, and trustworthy digital transformation framework for accelerating novel business models in future circular economy clusters

FENICE emerges as a catalyst for creating ecosystems around Circular Economy (CE) territorial clusters, at local/regional levels in Europe. It enables multi-stakeholder interactions through a set of innovative digital solutions including multisided/federated marketplace, matchmaking, recommendations, and gamification. It also enables stakeholders to assess the viability of CE processes, business models, and related KPIs, while giving excellent functional coverage to different needs (e.g., capacity building, co-creation, decision support, secure data exchange, hybrid smart contracts, incentivization, micro-investment, analysis, development of policies). FENICE offerings will be piloted in 3 territorial clusters to demonstrate the collaborative, trustworthy digital transformations in multiple CE scenarios across construction, water, plastics sectors.



Quick facts

Proposal	Partners	Participating Company
FENICE	34	Uni Systems
PUREAIR	23	Uni Systems



14 Culture & Education

Many UN Sustainable Development Goals place great importance on culture, creativity and education for a more sustainable future. Cultural industries were also especially affected by the COVID-19 pandemic.

The RDI actively and explicitly supports the protection, enhancement and restoration of cultural heritage, the cultural and creative industries, as well as high-quality and inclusive education through its research and innovation initiatives.

PROTECT - Protection of cultural, historical and traditional buildings with the use of novel green materials and earth observation techniques

PROTECT concentrates on providing solutions for quality conservation and preservation of cultural heritage buildings (CH) in a green and sustainable way, by focusing on how two novel green materials can preserve and protect CH buildings as well as their operators from sound pollution. It also focuses on the application of a non-intrusive remote sensing approach for buildings using satellite imaging and drones, to document and understand the pathology of the building to provide awareness of the CH structure status as well as monitor other environmental factors of pressure. The ambition of PROTECT is to deliver two novel green materials combined with a remote sensing methodology, all enhanced by a Data Management Platform that shall be feasible, user friendly, affordable and safe to the operators and the artefacts, in order to ensure the long-term conservation of and physical access to cultural heritage resources.

NFT4CULTURE - A pan-European NFT platform for financing cultural heritage preservation

NFT4Culture aims to demonstrate the transformative potential for the European museum business (galleries, foundations, etc.) of the global blockchain infrastructure and particularly of the so-called NFTs (Non-Fungible Tokens). Smaller museums often lack the technical skills/knowledge needed to make sense of the collections they own, and adequate capabilities to transform their business models and engage the private sector to jointly offer new products, services and processes. NFT4Culture sets out to provide EU museums and galleries not just with a dedicated NFT platform, but also with a broader understanding of the methodology and implications of adopting NFT as a complementary source of funding, increasing sustainability and job creation. NFT4Culture proposes to transform (EU and global) museum visitors into a community of returning - "circular" - cultural consumers. NFT4Culture aims to promote wider accessibility of art (and tools for understanding it) across society, to improve working conditions for young artists, and to open new economic and market opportunities to increase museums' financial sustainability.

Quick facts

Proposal	Partners	Participating Company
AUGMENTOR	13	Uni Systems (coordinator)
BCCI	11	Uni Systems (coordinator)
FUTOURISTIC	13	Uni Systems
NFT4CULTURE	9	Uni Systems (coordinator)
PROTECT	19	PROBOTEK



AUGMENTOR - Augmented intelligence for pedagogically sustained training and education

AUGMENTOR aims to develop a novel pedagogical framework that promotes both basic skills and 21st century competencies by integrating emerging technologies. This framework will be supported by an open access AI-boosted toolkit that builds on the strengths of big data and learning analytics to provide different types of stakeholders with explainable recommendations for smart search and identification of educational resources, as well as for designing personalized learning profiles that take into account individual actors' characteristics, needs, and preferences. AUGMENTOR will leverage advancements in the fields of Pedagogical Design, Creative Pedagogy, Explainable Artificial Intelligence, and Knowledge Representation and Reasoning for instructional purposes to provide guidelines to stakeholders on how to address potential underlying educational difficulties and disabilities, shape individual learning paths, or identify cases of gifted and talented students, to enable them to reach their full potential.



BCCI - Business School for women in the cultural & creative industries

Together with tourism, the cultural & creative industries (CCIs) are among the sectors most affected by COVID-19, mostly due to the halting/restriction of: non-essential physical production and distribution; international mobility; and social life – the most direct and visible effect was the considerable loss of income opportunities. The inability to generate income and the consequent precarious working condition might affect especially those that are already disadvantaged in their career development, such as women, disabled persons and other workers living in disadvantaged contexts. BCCI aims to enhance the digital and entrepreneurial skills for women who study in CCI-related fields.

FUTOURISTIC - Fostering digital and green skills capacity building of SMEs in tourism

Tourism microenterprises and SMEs, which are the backbone of the European tourism sector, were heavily impacted by the COVID-19 pandemic, which, however, accelerated the digital transformation of the industry. Given the rising importance of acquiring new skills for employees, leaders and students in the sector, FUTOURISTIC aims to contribute to the digital and green transformation of European microenterprises and SMEs of the tourism sector, through the upskilling and re-skilling of the tourism workforce and students by boosting innovation through cooperation and flow of knowledge among higher education, vocational education and training, as well as labor market actors. The partnership aims to boost the provision of new skills and address skills mismatches by designing and creating new curricula and transversal training material for higher education and vocational education and training, supporting the upskilling of existing employees and students to respond to the emerging new trends in the sector, and the development of sustainable tourism and entrepreneurial mind-sets.

15 Contact Us

The RDI Department is always searching for innovative minds that are willing to deep dive in emerging technologies and explore their potential upon and beyond state-of-the-art trends. Please don't hesitate to contact us and bring your ideas to explore their potential and find together a path for realization.

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